

## CURRICULUM VITAE

**Name:** SANFORD E. EMERY, M.D., M.B.A.

**Office Address:** Department of Orthopaedics  
West Virginia University  
PO Box 9196  
Morgantown, West Virginia 26506-9196

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### PERSONAL DATA:

Date of Birth: February 19, 1956  
Birthplace: Albany, New York; Albany County, U.S.A.  
Marital Status: Married, 3 Children

### EDUCATION:

#### **Undergraduate:**

Dartmouth College, Biochemistry Major  
B.A. 1978, Summa Cum Laude  
Honors/Activities: Phi Beta Kappa  
Intercollegiate Baseball - 4 Years  
President, HPF Fraternity

#### **Medical:**

Duke University School of Medicine  
M.D., December 1981

#### **Master in Business Administration:**

Case Western Reserve University  
Weatherhead School of Management  
Executive M.B.A., May 2003

### POSTGRADUATE TRAINING:

**Medical Internship**, Strong Memorial Hospital, Rochester, New York,  
January 1982 - June 1982.

**Surgical Residency**, Strong Memorial Hospital, Rochester, New York,  
July 1982 - June 1984.

**Orthopaedic Residency**, Strong Memorial Hospital, Rochester, New York,  
July 1984 - June 1987.

**Spine Fellowship**, Case Western Reserve University Hospitals,  
Cleveland, Ohio, July 1987 - June 1988.

**Executive M.B.A. Program**, Weatherhead School of Management, Case  
Western Reserve University, 2001 - 2003.

**POSTGRADUATE EXAMS:**

1. Written (Part I) Orthopaedic Specialty Board Exam, Passed 7/87
2. Oral (Part II) Orthopaedic Specialty Board Exam, Passed 7/13/90
3. Re-certification Exam, American Board of Orthopaedic Surgery, Passed February 1999.
4. Re-certification Exam, American Board of Orthopaedic Surgery, Passed November 2009.

**LICENSES:**

West Virginia  
Ohio

**CURRENT EMPLOYMENT:**

Professor and Chairman, Department of Orthopaedics,  
West Virginia University, Morgantown, West Virginia

**DATES OF FACULTY APPOINTMENTS:**

Instructor, Department of Orthopaedics, Case Western Reserve University,  
Cleveland, Ohio, 1988-1989.

Assistant Professor, Department of Orthopaedics, Case Western Reserve  
University, Cleveland, Ohio, 1989-1997.

Associate Professor with Tenure, Department of Orthopaedics, Case Western  
Reserve University, Cleveland, Ohio, 1997-2003.

Professor with Tenure, Department of Orthopaedics, Case Western Reserve  
University, Cleveland, Ohio, 2003.

Professor and Chairman, Department of Orthopaedics, West Virginia University,  
Morgantown, West Virginia, August 29, 2003 – Present.

**HOSPITAL APPOINTMENTS:**

University Orthopaedic Associates, Inc., 11100 Euclid Avenue, Cleveland, Ohio,  
July 1, 1988 – 2003.

University Hospitals of Cleveland, 11100 Euclid Avenue, Cleveland, Ohio,  
Active Staff, July 1, 1988 – 2003.

Veterans Administration Hospital, Wade Park, Cleveland, Ohio, Active Staff,  
July 1, 1988 – 2003.

Cleveland MetroHealth Medical Center, 3395 Scranton Road, Cleveland, Ohio,  
Associate Staff, July 1, 1988 – 2003.

West Virginia University Hospital's Inc., 1 Stadium Drive, Morgantown, West  
Virginia, Active Staff, September 11, 2003.

**PROFESSIONAL MEDICAL SOCIETIES/ORGANIZATIONS:**

Member, Ohio Orthopaedic Society	1988 - 2003
Member, Cleveland Academy of Medicine	1988 - 2003
Member, American Medical Association	1988 - 1999
Member, American Spinal Injury Association	1990 - 1996
Member, Orthopaedic Research Society	1991 - Current
Member, Cervical Spine Research Society	1991 - Current
Member, American Academy of Orthopaedic Surgeons	1992 - Current
Member, Scoliosis Research Society	1992 - Current
Member, North American Spine Society	1992 - Current
Member, Academic Orthopaedic Society	1994 - Current
Member, American Orthopaedic Association	2003 - Current
Member, West Virginia Orthopaedic Society	2004 - Current
Member, American College of Physician Executives	2005 - Current
Director-Elect, American Board of Orthopaedic Surgery	2009 - Current

**ADMINISTRATION/COMMITTEES:**

Department of Orthopaedics, Education Committee, CWRU 1988 - 1994

Department of Orthopaedics, Quality Assurance Committee, CWRU 1988 - 1994

University Hospitals, Medical Records Committee, CWRU 1988 - 1992

University Hospitals, Autologous Blood Usage Task Force, CWRU 1989 - 1990

Veterans Administration Hospital, Ambulatory Services Committee, 1989 - 1990

University Hospitals, Rehabilitation Department Staff Advisory Committee,  
CWRU 1989 - Present

Case Western Reserve University Medical School, Faculty Council, 1990 - 1993

Orthopaedic Research Retreat Task Force, 1992, 1994

Department of Orthopaedics Research Committee, CWRU 1993 - 1996

Director of Orthopaedic Graduate Education, Department of Orthopaedics, CWRU 1994 - 2001

Chairman, Education Committee, Department of Orthopaedics, CWRU 1994 - 2001

Chairman, University Hospitals Laminectomy Task Force, CWRU 1994 - 1998

Program Committee, Scoliosis Research Society, 1996 - 1998

Research Committee, Cervical Spine Research Society, 1996 – 2000

Chairman, Program Committee, Scoliosis Research Society, 1997 - 1998

American Board of Orthopaedic Surgery Spine Recertification Task Force, 1998 - 2000

Executive Committee, National Spine Network, 1996 - Present

Chairman, Research Committee, Cervical Spine Research Society, 2000 -Present

Program Committee, North American Spine Society, 2000 - Present

OREF (Orthopaedic Research and Education Foundation) Peer Review Committee, 2000 - Present

Executive Council, Cleveland Orthopaedic Society, 2000 - 2003

AAOS (American Academy of Orthopaedic Surgeons) Research Committee, 2000 – Present

American Board of Orthopaedic Surgery Question Writing Task Force, 2003 – Present

Scoliosis Research Society Exhibits Committee, 2004 - Present

Chairman, Strategic Planning Committee, West Virginia University School of Medicine, 2004 – 2006

AAOS Health Care Delivery Committee, 2003 – 2005

Chairman, Continuing Education Committee, Cervical Spine Research Committee, 2005 – 2006

Chairman, Anesthesiology Chair Search Committee, West Virginia University School of Medicine, 2005

ABOS Standard Setting for Recertification Examination, Philadelphia, PA, April 13, 2005.

Executive Finance Advisory Council, West Virginia University School of Medicine, 2006 – Current.

Chair & Center Directors Council, West Virginia University School of Medicine, 2006 – Current.

Managed Care Steering Committee, West Virginia University School of Medicine, 2006 – Current.

Treasurer, Cervical Spine Research Society, 2006 – Present.

American Orthopaedic Association (AOA) Academic Leadership Committee, 2004 – Current.

American Orthopaedic Association (AO) Leadership Development Committee, 2004 – Current.

Integration Work Group, West Virginia University School of Medicine, 2008 – Current.

University Health Association Board of Directors, 2008 – Current.

Chair, Finance Committee of University Health Associates, 2009 – Current.

#### **EDITORIAL POSITIONS:**

1. Reviewer for *Journal of Bone and Joint Surgery*, 1997-Present
2. Reviewer for *Spine*, 1996-Present
3. Reviewer for *Journal of Spinal Disorders & Techniques*, 2003 – Present

**VISITING PROFESSOR LECTURES:**

1. Visiting Professor Lectureship, Orthopaedic Grand Rounds, Division of Orthopaedics, September 30, 1995, Birmingham, AL
  - Surgical Treatment of Spinal Neoplasms
2. Visiting Professor Lectureship, Akron, OH
  - Surgical Treatment of Cervical Myelopathy
3. Fourth Annual Dartmouth Orthopaedic/Spine Center Visiting Professor Lectureship, Dartmouth-Hitchcock Medical Center, Lebanon, NH, May 5, 2004
  - Surgical Treatment of Cervical Myelopathy
  - Spinal Neoplasms: Clinical and Basic Science Aspects of Surgical Treatment
4. Visiting Professor Lectureship, Rhode Island Hospital, Department of Orthopaedics, Brown Medical School, Providence, RI, November 10, 2004
  - Surgical Treatment of Cervical Myelopathy
  - Spinal Neoplasms: Clinical and Basic Science Aspects of Surgical Treatment
5. Visiting Professor Lectureship, Charlotte Orthopaedic Specialists, Charlotte, NC, February 10, 2005
  - Surgical Treatment of Cervical Myelopathy
  - Spinal Neoplasms: Clinical and Basic Science Aspects of Surgical Treatment
6. Visiting Professor Lectureship, Georgetown University, Washington, DC, September 20, 2005
  - Surgical Treatment of Cervical Myelopathy
7. Visiting Professor Lectureship, Duke University, Durham, NC, January 17, 2007
  - Surgical Treatment of Cervical Myelopathy, Past, Present and Perspective
8. Visiting Professor Lectureship, University of Maryland, College Park, MD, May 24, 2007
  - Surgical Treatment of Cervical Myelopathy, Past, Present and Perspective
9. Visiting Professor Lectureship, University of Pittsburgh, Pittsburgh, PA, January 23, 2008
  - Surgical Treatment of Cervical Myelopathy, Past, Present and Perspective
10. Visiting Professor Lectureship, Allegheny General Hospital, Pittsburgh, PA, January 13, 2009
  - Surgical Treatment of Cervical Myelopathy, Past, Present and Perspective

## RESEARCH GRANTS:

1. Orthopaedic Research and Education Foundation Project Grant, “The biologic and biomechanical effects of irradiation on anterior spinal bone grafts,” \$78,000 (March '90 thru February '92). Principal Investigator = Sanford E. Emery, M.D.
2. Orthopaedic Research and Education Foundation Career Development Award, “Autogenous marrow stem cell augmentation of vertebral anterior interbody fusion,” \$97,533 (March '91 thru February '93). Principal Investigator = Sanford E. Emery, M.D.
3. Scoliosis Research Society Grant, “Mesenchymal stem cell augmentation of posterior spinal fusion,” \$35,000 (January '92 thru January '94). Principal Investigator = Sanford E. Emery, M.D.
4. Project Grant (Synthes), “Anterior cervical discectomy and fusion with and without anterior plate instrumentation: a randomized, prospective study,” \$42,200 (September 1995-2002). Principal Investigator = Sanford E. Emery, M.D.
5. Project Grant (Danek), “Lumbar fusion with and without bracing: a randomized, prospective study,” \$37,200 (October 1995-2002). Principal Investigator = Sanford E. Emery, M.D.
6. NIH/NIAMS Multi-Institutional Spine Patient Outcomes Research Trial (SPORT) Grant. Site Principal Investigator = Sanford E. Emery, M.D. (UH/CWRU); “Multi-center randomized clinical trial of surgical and nonsurgical approaches to the treatment of low back pain,” Grant UO1-AR45444-01A1, \$13.8 million (October 1999-2003). Principal Investigator = James Weinstein, M.D. (Dartmouth).
7. Project Grant (Implex), “The use of porous tantalum in anterior cervical spondylosis: an *in vivo* goat study,” \$29,863 (July 2001-2002). Principal Investigator = Sanford E. Emery, M.D.
8. AO Foundation Grant, “A pilot study of synovium-derived stem cell as a potential cell source for disc tissue engineering,” \$97,200 (January 2007-December 2008). Co-Investigator = Sanford E. Emery, M.D.

## AWARDS:

1. Russell Hibbs Award for Basic Science Research - Presented by the Scoliosis Research Society on 9/26/92 for Project Entitled "The biological and biomechanical effects of irradiation on anterior spinal bone grafts - a canine model."
2. Co-Author for Outstanding Resident Paper Award, Cervical Spine Research Society, December 1993, "A kinematic study of the cervical spine before and after segmental arthrodesis."
3. John R. Carter Orthopaedic Teaching Award, Presented by the Residents for Dedication to Excellence in Orthopaedic Teaching, June 1994.
4. Dean's Academic Achievement Award, Weatherhead School of Management Executive MBA program, Case Western Reserve University, August 2001 thru May 2003.
5. Cervical Spine Research Society Best Clinical Poster Award, "Steroids and Risk Factors for Cervical Corpectomy Patients: A Randomized, Prospective Study", Scottsdale, Arizona, December 10-13, 2003.
6. Selected for "Best Doctors in America 2003-2004".
7. Selected for "Best Doctors in America 2005-2006".
8. West Virginia University Dean's Award for Excellence 2008.
9. 2009 West Virginia University Quality Award Honoree, Surgical Care Improvement Project Team-Hip & Knee, April 21, 2009.
10. Selected for "Best Doctors in America 2009-2010".

#### **PUBLISHED ARTICLES:**

1. **Emery SE**, Gifford JF: 100 years of tennis elbow. *Contemporary Orthopaedics*, Vol 12 (4), p 53, April 1986.
2. **Emery SE**, Chan DPK, Woodward HR: Treatment of hematogenous pyogenic vertebral osteomyelitis with anterior debridement and primary bone grafting. *Spine*, Vol 14 (3), pp 284-291, March 1989.
3. Bohlman HH, **Emery SE**: The pathophysiology of cervical spondylosis and myelopathy. *Spine*, Vol 13 (7), pp 843-846, July 1988.

4. **Emery SE**, Pathria MN, Wilber RG, Masaryk T, Bohlman HH: Magnetic resonance imaging of posttraumatic spinal ligament injury. *Journal of Spinal Disorders*, Vol 2 (4), pp 229-233, June 1989.
5. Ross JS, Blaser S, Masaryk TJ, **Emery SE**, Bolesta M, Carter J, Aikawa M, Modic MT: Gadolinium DTPA enhancement of posterior epidural scar: an experimental model. *American Journal of Neuroradiology*, Vol 10 (5), pp 1083-1088, September-October 1989.
6. **Emery SE**, Smith MD, Bohlman HH: Upper airway obstruction after multilevel cervical corpectomy for myelopathy. *The Journal of Bone and Joint Surgery*, Vol 73-A (4), pp 544-551, April 1991.
7. Smith MD, **Emery SE**, Dudley A, Leventhal M: Vertebral artery injury during anterior decompression of the cervical spine: a retrospective review of ten patients. *The Journal of Bone and Joint Surgery*, Vol 75-B (3), pp 410-415, May 1993.
8. Bohlman HH, **Emery SE**, Goodfellow DB, Jones PK: Robinson anterior cervical discectomy and arthrodesis for cervical radiculopathy: long term follow-up of one hundred and twenty-two patients. *The Journal of Bone and Joint Surgery*, Vol 75-A (9), pp 1298-1307, September 1993.
9. **Emery SE**, Hughes SS, Junglas WA, Herrington S, Pathria MN: The fate of anterior vertebral bone grafts in patients irradiated for neoplasm. *Clinical Orthopaedics and Related Research*, (300), pp 207-212, March 1994.
10. **Emery SE**, Bolesta MJ, Banks MA, Jones PK: Robinson anterior cervical fusion: comparison of the standard and modified techniques. *Spine*, Vol 19 (6), pp 660-663, March 15, 1994.
11. Abdu WA, Wilber RG, **Emery SE**: Pedicular transvertebral screw fixation of the lumbosacral spine in spondylolisthesis -- a new technique for stabilization. *Spine*, Vol 19 (6), pp 710-715, March 15, 1994.
12. **Emery SE**, Brazinski MS, Koka A, Bensusan JS, Stevenson S: The biological and biomechanical effects of irradiation on anterior spinal bone grafts in a canine model. *The Journal of Bone and Joint Surgery*, Vol 76-A (4), pp 540-548, April 1994.
13. Bouchard JA, Koka A, Bensusan JS, Stevenson S, **Emery SE**: Effects of irradiation on posterior spinal fusions: a rabbit model. *Spine*, Vol 19(16), pp 1836-1841, August 15, 1994.
14. Petersilge CA, Pathria MN, **Emery SE**, Masaryk TJ: Thoracolumbar burst fractures: evaluation with MR imaging. *Radiology*, Vol 194 (1), pp 49-54, January 1995.

15. Kirkpatrick JS, Wilber RG, Likavec M, **Emery SE**, Ghanayem A: Anterior stabilization of thoracolumbar burst fractures using the Kaneda device. *Orthopedics*, Vol 18 (7), pp 673-678, July 1995.
16. Feighan JE, Stevenson S, **Emery SE**: Biological and biomechanical evaluation of posterior lumbar fusion in the rabbit: the effect of fixation rigidity. *Spine*, Vol 20 (14), pp 1561-1567, July 15, 1995.
17. Stevenson S, **Emery SE**, Goldberg VM: Factors affecting bone graft incorporation. *Clinical Orthopaedics and Related Research*, (324), pp 66-74, March 1996.
18. Petersilge CA, **Emery SE**: Thoracolumbar burst fracture: evaluating stability. *Seminars in Ultrasound, CT, and MRI*, Vol 17 (2), pp 105-113, April 1996.
19. **Emery SE**, Heller JG, Petersilge CA, Bolesta MJ, Whitesides TE: Tibial stress fracture after a graft has been obtained from the fibula. *The Journal of Bone and Joint Surgery*, Vol 78-A (8), pp 1248-1251, August 1996.
20. Fuller DA, Stevenson S, **Emery SE**: The effects of internal fixation on calcium carbonate ceramic anterior spinal fusion in dogs. *Spine*, Vol 21 (18), pp 2131-2136, Sept. 1996.
21. **Emery SE**, Fuller DA, Stevenson S: Ceramic anterior spinal fusion: biologic and biomechanical comparison in a canine model. *Spine*, Vol 21 (23), pp 2713-2719, Dec. 1, 1996.
22. Phillips FM, Carlson G, **Emery SE**, Bohlman HH: Anterior cervical pseudarthrosis: natural history and treatment. *Spine*, Vol 22 (14), pp 1585-1589, July 15, 1997.
23. **Emery SE**, Fisher JR, Bohlman HH: Three-level anterior cervical discectomy and fusion: radiographic and clinical results. *Spine*, Vol 22 (22), pp 2622-2624, Nov. 15, 1997.
24. Fuller DA, Kirkpatrick JS, **Emery SE**, Wilber RG, Davy DT: A kinematic study of the cervical spine before and after segmental arthrodesis. *Spine*, Vol 23 (15), pp 1649-1656, August 1, 1998.
25. **Emery SE**, Bohlman HH, Bolesta MJ, Jones PK: Anterior cervical decompression and arthrodesis for the treatment of cervical spondylotic myelopathy. two to seventeen-year follow-up. *The Journal of Bone and Joint Surgery*, Vol 80-A (7), pp 941-951, July 1998.

26. **Emery SE:** In situ decompression and fusion techniques for spondylolisthesis. *Seminars in Spine Surgery*, Vol 11 (1), pp 34-47, March 1999.
27. **Emery SE:** Surgical management of cervical myelopathy. *Instructional Course Lectures (AAOS)*, Vol 48, pp 423-426, 1999.
28. Hilibrand AS, Fye MA, **Emery SE**, Palumbo MA, Bohlman HH: Impact of smoking on the outcome of anterior cervical arthrodesis with interbody or strut-grafting. *The Journal of Bone and Joint Surgery*, Vol 83-A (5), pp 668-673, May 2001.
29. **Emery SE:** Cervical spondylotic myelopathy. *Journal of the American Academy of Orthopaedic Surgeons*, Vol 9 (6), pp 376-388, November-December, 2001.
30. Hilibrand AS, Fye MA, **Emery SE**, Palumbo MA, Bohlman HH: Increased rate of arthrodesis with strut grafting after multilevel anterior cervical decompression. *Spine*, Vol 27 (8), pp 146-151, January 15, 2002.
31. Cannada LK, Scherping SC, Yoo JU, Jones PK, **Emery SE:** Pseudarthrosis of the cervical spine: a comparison of radiographic diagnostic measures. *Spine*, Vol. 28 (1), pp 46-50, January 1, 2003.
32. Wang JC, Hart RA, **Emery SE**, Bohlman HH: Graft migration or displacement after multilevel cervical corpectomy and strut grafting. *Spine*, Vol 28 (10), pp 1016-1021, May 15, 2003.
33. Carlson G, Oliff H, Anderson P, **Emery S**, Yoo J, Hughes S, Bohlman H: Neurological injuries associated with post-operative lumbar epidural hematoma, submitted to *Spine*, May 2002.
34. Milam, A, **Emery, S.** Anterior Approach for Cervical Spondylotic Myelopathy, *Seminars in Spine Surgery*, Volume 16, (1), pp 16-34, March 2004.
35. Belanger T, Roh J, Hanks S, Kang J, **Emery S**, Bohlman H: Ossification of the posterior longitudinal ligament, *The Journal of Bone & Joint Surgery*, Vol. 87, pp 610 – 615, March 2005.
36. Chin KR, Kuntz AF, Bohlman HH, **Emery SE:** Changes in the iliac crest-lumbar relationship from standing to prone, *Spine*, pp 185-9, January 2006.
37. Hughes S, Pringle T, Phillips F, **Emery S:** Settling of fibula strut grafts following multilevel anterior cervical corpectomy, *Spine*, Vol. 31, pp1911-1915, August 2006.

38. Kwon B, Furey CG, Rowbottom J, **Emery SE**. Risk factors for delayed extubation after single-staged, multi-level anterior cervical decompression and posterior fusion, *J Spinal Disord Tech*, pp 389-393, August 2006.
39. **Emery SE**, Gregory C. Physician incentives for academic productivity. An analysis of orthopaedic department compensation strategies, *J Bone Joint Surg Am*, pp 2049-2056, September 2006.
40. Hughes SS, Pringle T, Phillips F, **Emery SE**: Settling of fibula strut grafts following multilevel anterior cervical corpectomy: a radiographic evaluation, *Spine*, pp1911-5, August 2006.
41. Weinstein JN, Lurie JD, Tosteson TD, Hanscom B, Tosteson AN, Blood EA, Birkmeyer NJ, Hillibrand AS, Herkowitz H, Cammisa FP, Albert TJ, **Emery SE**, Lanke LG, Abdu WA, Longley M, Errico TJ, Hu SS: Surgical versus nonsurgical treatment for lumbar degenerative spondylolisthesis, *New England Journal of Medicine*, pp 2257-70, May 2007.
42. Pearson AM, Blood EA, Frymoyer JW, Herkowitz H, Abdu WA, Woodward R, Longley M, **Emery SE**, Lurie JD, Tosteson TD, Weinstein JN: SPORT lumbar intervertebral disk herniation and back pain: does treatment, location, or morphology matter?, *Spine*, pp 428-35, February 2008.
43. Yee AJ, Yoo JU, Marsolais EB, Carlson G, Poe-Kochert C, Bohlman HH, **Emery SE**: Use of a postoperative lumbar corset after lumbar spinal arthrodesis for degenerative conditions of the spine. A prospective randomized trial, *J Bone Surg Am*, pp 2062-6, October 2008.
44. **Emery SE**, Akhavan S, Miller P, Furey C, Yoo J, Rowbottom J, Bohlman H: Steroids risk factors for airway compromise in multilevel cervical corpectomy patients. A prospective, randomized, double-blind study, *Spine*, pp229-232, February 2009.
45. **Emery SE**, Waddell JP, Wadell AE, McCaslin M, Black K: Orthopaedic Education – Are we attracting the best and the brightest? *J Bone Joint Surg Am*, pp1253-1263, May 2009.
46. Chen S, **Emery SE**, Pei M: Coculture of synovium-derived stem cells and nucleus pulposus cells in serum-free defined medium with supplementation of transforming growth factor-beta1: a potential application of tissue-specific stem cells in disc regeneration, *Spine*, pp 1272-80, May 2009.
47. Abdu WA, Lurie JD, Spratt KF, Tosteson AN, Zhao W, Tosteson TD, Herkowitz H,

Longely M, Boden SD, **Emery SE**, Weinstein JN: Degenerative spondylolisthesis does fusion method influence outcome? Four-year results of the spine patient outcomes research trial, *Spine*, pp 2351-2360, 2009.

#### **EDITORIALS:**

1. Point of View, *Spine*, 23:920, 1998.
2. Point of View, *Spine*, 23:447, 1998.
3. Point of View, *Spine*, 25:45, 2000.
4. Point of View, *Spine*, 26:1872, 2001.
5. Point of View, *Spine*, 28:1691-2, 2003.

#### **BOOK CHAPTERS:**

1. **Emery SE**, Bohlman HH: Osteoarthritis of the C-spine, Chapter 26. In *Osteoarthritis, Diagnosis and Management*. RW Moskowitz, DS Howell, VM Goldberg, HJ Mankin, eds, WB Saunders Co, Philadelphia, 2nd edition, 1992.
2. **Emery SE**: The cervical and thoracic spine. In *Orthopaedics: Problems in Primary Care*. RE Marcus, ed, Practice Management Information Corporation, Los Angeles, 1991.
3. **Emery SE**, Bohlman HH: Anterior decompression of cervical myelopathy associated with cervical spondylosis and deformity. In *Disorders of the Cervical Spine*. MB Camins, PF O'Leary, eds, Williams & Wilkins, Baltimore, 1992.
4. Bohlman HH, **Emery SE**: Complications of treatment of fractures and dislocations of the cervical spine. In *Complications of Orthopaedic Surgery*. Charles Epps, ed, JB Lippincott, Philadelphia, 3rd edition, 1994.
5. **Emery SE**: Cervical spondylotic radiculopathy and myelopathy. In *Spinal Medicine and Surgery: A Multidisciplinary Approach*. Arthur White, ed, Mosby-Year Book Inc, 1995.
6. **Emery SE**: Anterior retroperitoneal lumbar exposures. In *Surgical Approaches to the Spine*. RA Balderston, TJ Albert, eds, pp 145-156, WB Saunders Co, Philadelphia, 1997.

7. **Emery SE**, Bolesta MJ: Complications of cervical spine surgery. In *The Textbook of Spinal Surgery*. KH Bridwell, RL DeWald, eds, 2nd edition, Lippincott-Raven, Philadelphia, 1997.
8. **Emery SE**: Anterior approach for cervical myelopathy. In *The Cervical Spine*. Charles R. Clark, ed, Lippincott-Raven, Philadelphia, 3rd edition, 1998.
9. **Emery SE**: Cervical disc disease and cervical spondylosis. In *Principles and Techniques in Spine Surgery*. Howard An, ed, Williams & Wilkins, Baltimore, 1998.
10. **Emery SE**: Cervical degenerative disc disorders. In *Orthopaedic Knowledge Update - 6*. James H. Beaty, ed, pp 673-680, AAOS, Rosemont, Illinois, 1999.
11. **Emery SE**, Oro J: Cervical infections. In *The Failed Spine*. Scott Boden, Henry Bohlman, eds, Lippincott Williams & Wilkins, 2003.
12. **Emery SE**: Surgical considerations in osteoarthritis--the cervical spine. In *Osteoarthritis*. R. Moskowitz et al, eds, Saunders, 3<sup>rd</sup> edition, Philadelphia, 1992.
13. **Emery SE**: Vertebral osteomyelitis. In *Spinal Deformities*. Scoliosis Research Society, New York, 2003.
14. **Emery SE**: Inflammatory arthritis of the spine. In *Spinal Deformities*. Scoliosis Research Society, New York, 2003.
15. **Emery SE**: Cervical spondylotic myelopathy and cervical kyphosis. In *Surgery of the Cervical Spine*. Sanford Emery and Scott Boden, eds, WB Saunders Co., Philadelphia, PA, 2003.
16. Fye, MA, **Emery SE**: Anterior cervical reconstruction and internal fixation. In *Surgery of the Cervical Spine*. Sanford Emery and Scott Boden, ed., WB Saunders Co., Philadelphia, PA, 2003.
17. **Emery SE**: Primary and metastatic tumors of the cervical spine. In *Surgery of the Cervical Spine*. Sanford Emery and Scott Boden, eds, WB Saunders Co., Philadelphia, PA, 2003.
18. **Emery SE**, Boden SD: Rheumatoid arthritis of the cervical spine. In *Surgery of the Cervical Spine*. Sanford Emery and Scott Boden, eds, WB Saunders Co., Philadelphia, PA, 2003.

19. Bohlman, HH, **Emery SE**: The cervical spine in ankylosing spondylitis. In *Surgery of the Cervical Spine*. Sanford Emery and Scott Boden, eds, WB Saunders Co., Philadelphia, PA, 2003.
20. **Emery SE**: Summary: anterior and/or posterior--when to go anterior or posterior? In: Clark CR, Benzel EC, Currier BL, et al, eds. *The Cervical Spine*. 4<sup>th</sup> ed. Philadelphia, PA. Lippincott Williams & Wilkins; 2004.
21. **Emery, SE**: Anterior decompression for myelopathy; corpectomy. In *The Cervical Spine Surgical Atlas*, Harry Herkowitz, ed., Lippincott Williams & Wilkins, 2<sup>nd</sup> edition, 2004.
22. Traynelis V, Saunders R, **Emery SE**: Interbody strut techniques. In *Spine Surgery Techniques: Complication Avoidance and Management*, Edward Benzel, ed, WB Saunders 2<sup>nd</sup> edition, 2004..
23. **Emery SE**: Thoracic disc disease and myelopathy. In *The Adult and Pediatric Spine*, John Frymoyer, Sam Wiesel, eds, Lippincott Williams & Wilkins, 3<sup>rd</sup> edition, 2005.
24. Chin K, **Emery SE**: Surgical management of rheumatoid arthritis. In *The Spine*, H. Herkowitz, S. Garfin, et al. eds. WB Saunders, Philadelphia, PA; 2006.
25. Cronen GA, **Emery SE**: Benign and malignant lesions of the spine. *Orthopaedic Knowledge Update* 3<sup>rd</sup> edition, pp 351-366, 2006.
26. Chen S, **Emery SE**, Pei M: Coculture of synovium-derived stem cells and nucleus pulposus cells in serum-free defined medium with supplementation of transforming growth factor-1. *Spine*, Lippincott Williams & Wilkins, 2009.

#### **TEXTBOOK:**

**Emery SE**, Boden S., eds: *Surgery of the Cervical Spine*. WB Saunders Co., Philadelphia, PA, 2003.

#### **SCIENTIFIC PRESENTATIONS AT NATIONAL/INTERNATIONAL MEETINGS:**

1. Federation of Spine Associations Meeting, American Academy of Orthopaedic Surgeons, Paper Presentation: "Treatment of hematogenous pyogenic vertebral osteomyelitis with anterior debridement and primary bone grafting," New Orleans, Louisiana, February 1986.

2. Resident AOA (American Orthopaedic Association) Meeting: "Treatment of hematogenous pyogenic vertebral osteomyelitis with anterior debridement and primary bone grafting," Los Angeles, California May 1986.
3. American Spinal Injury Association Meeting, Paper Presentation: "MRI of post-traumatic spinal ligament injury," Orlando, Florida, May 3-5, 1990.
4. Cervical Spine Research Society, Paper Presentation: "Robinson anterior discectomy and fusion for cervical radiculopathy -- long term follow-up of 122 patients," San Antonio, Texas, November 1990.
5. American Academy of Orthopaedic Surgeons Meeting, Paper Presentation: "Robinson anterior discectomy and fusion for cervical radiculopathy -- long term follow-up of 122 patients," Anaheim, California, March 1991.
6. American Spinal Injury Association Meeting, Paper Presentation: "Upper airway obstruction following multilevel cervical corpectomies for severe myelopathy," Seattle, Washington, April 1991.
7. American Academy of Orthopaedic Surgeons Course on Evaluation and Treatment of Spinal Trauma: "Epidemiology and emergency treatment of the spinal cord injury," Cleveland, Ohio, May, 1991.
8. American Academy of Orthopaedic Surgeons Course on Evaluation and Treatment of Spinal Trauma: "Techniques for imaging of the spine," Cleveland, Ohio, May 4, 1991.
9. North American Spine Society Meeting, Paper Presentation: "Upper airway obstruction following multilevel cervical corpectomies for severe myelopathy," Keystone, Colorado, August 1, 1991.
10. North American Spine Society Meeting, Paper Presentation: "Irradiation and anterior vertebral bone grafts: do they heal?" Keystone, Colorado, August 1, 1991.
11. International Society for Study of the Lumbar Spine, Paper Presentation: "The biological and biomechanical effects of irradiation on anterior spinal bone grafts -- a canine model," Chicago, Illinois, May 22, 1992.
12. North American Spine Society Meeting Paper Presentation: "Robinson anterior cervical fusion: a comparison of the modified vs standard techniques," Boston, Massachusetts, July, 1992.

13. North American Spine Society Meeting, Paper Presentation: "The biological and biomechanical effects of irradiation on anterior spinal bone grafts -- a canine model," Boston, Massachusetts, July, 1992.
14. Scoliosis Research Society Meeting, Paper Presentation: "The biological and biomechanical effects of irradiation on anterior spinal bone grafts -- a canine model," Kansas City, Missouri, September, 1992.
15. American Academy of Orthopaedic Surgeons Meeting, Paper Presentation: "The biological and biomechanical effects of irradiation on anterior spinal bone grafts -- a canine model," San Francisco, California, February 1993.
16. Federation of Spine Association Meeting, Paper Presentation: "The biological and biomechanical effects of irradiation on anterior spinal bone grafts - a canine model," San Francisco, California, February 1993.
17. North American Spine Society Meeting, Paper Presentation: "The effects of irradiation on posterior spinal fusions: a rabbit model," San Diego, California, October 1993.
18. Cervical Spine Research Society Meeting, Paper Presentation: "Anterior decompression and fusion for cervical spondylotic myelopathy: one to 17 year follow-up of 72 patients," New York, New York. December 1993.
19. Orthopaedic Research Society, Paper Presentation: "Ceramic anterior spinal fusion: biological and biomechanical comparison in a canine model," New Orleans, Louisiana, February 1994.
20. Instructional Course Lecturer and Moderator, American Academy of Orthopaedic Surgeons Meeting: "Indications and techniques of anterior cervical decompression and fusion," New Orleans, Louisiana, February 1994.
21. American Academy of Orthopaedic Surgeons Meeting, Paper Presentation: "Anterior decompression and fusion for cervical spondylotic myelopathy: two to seventeen year follow-up," New Orleans, Louisiana, February 1994.
22. Scoliosis Research Society Meeting, Paper Presentation: "Ceramic anterior spinal fusion: biological and biomechanical comparison in a canine model," Portland, Oregon, September 23, 1994.
23. North American Spine Society Meeting, Paper Presentation: "Lumbar fusion with and without instrumentation: a prospective study," Minneapolis, Minnesota, October 20, 1994.

24. Cervical Spine Research Society, Instructional Course Lecturer for the 4th Instructional Course on Cervical Spine Disorders: "Cervical spine deformity," Baltimore, Maryland, December 5, 1994.
25. Instructional Course Lecturer, American Academy of Orthopaedic Surgeons Meeting: "Indications and techniques of anterior cervical decompression and fusion," Orlando, Florida, February 17, 1995.
26. Lecturer, Symposium on Complications of Instrumentation of the Spine: "Clinical outcomes of spinal fusion with and without internal fixation," Orlando, Florida, February 18, 1995.
27. Lecturer, Musculoskeletal Tumor Society Specialty Day Symposium on Surgical Treatment of Spinal Metastasis: "Bone graft? Radiate? Both? Irradiation and bone grafting in the spine," Orlando, Florida, February 19, 1995.
28. Instructional Course Lecturer, American Academy of Orthopaedic Surgeons Meeting: "Rheumatoid arthritis of the cervical spine: pathology and treatment concepts," Orlando, Florida, February 20, 1995.
29. Scoliosis Research Society Meeting, Paper Presentation: "The effect of internal fixation on calcium carbonate ceramic anterior spinal fusion in the canine," Asheville, North Carolina, September 16, 1995.
30. Visiting Guest Lecturer, Department of Orthopaedics, University of Alabama Medical Center: "Cervical disc disease," and "Surgical treatment of spinal tumors: basic science and clinical aspects," Birmingham, Alabama, September 29 and 30, 1995.
31. Lecturer, Basic Principles of the Treatment of Spinal Deformity--Disorders of the Adult Spine Course: "Surgical treatment of spinal tumors," Cleveland, Ohio, November 18, 1995.
32. Cervical Spine Research Society, Paper Presentation: "Tibial stress fractures following fibula graft harvest," Santa Fe, New Mexico, November 30, 1995.
33. Instructional Course Lecturer, American Academy of Orthopaedic Surgeons Meeting: "Indications and techniques of anterior cervical decompression and fusion," Atlanta, Georgia, February 24, 1996.
34. Instructional Course Lecturer, American Academy of Orthopaedic Surgeons Meeting: "Rheumatoid arthritis of the cervical spine: pathology and treatment concepts," Atlanta, Georgia, February 26, 1996.

35. North American Spine Society Symposium Participant - Debate: "Anterior cervical discectomy and fusion," Vancouver, British Columbia, October 25, 1996.
36. Instructional Course Lecturer, Cervical Spine Research Society: "Plain radiographs in the diagnosis of cervical spine disorders," Palm Beach, Florida, December 7, 1996.
37. Instructional Course Lecturer, American Academy of Orthopaedic Surgeons Meeting: "Indications and techniques of anterior cervical decompression and fusion," San Francisco, California, February 1997.
38. Instructional Course Lecturer, American Academy of Orthopaedic Surgeons Meeting: "Rheumatoid arthritis of the cervical spine: pathology and treatment concepts," San Francisco, California, February 1997.
39. ORS/AAOS Symposium on Biological Approaches to Spine Fusion, Lecturer: "Bone graft substitutes for spine fusion," San Francisco, California, February 13, 1997.
40. Cervical Spine Research Society Symposium Participant: "Anterior cervical discectomy alternatives: grafts vs. instrumentation," Palm Springs, California, December 5, 1997.
41. Instructional Course Lecturer, American Academy of Orthopaedic Surgeons Meeting: "Indications and techniques of anterior cervical decompression and fusion," New Orleans, Louisiana, March 1998.
42. Instructional Course Lecturer, American Academy of Orthopaedic Surgeons Meeting: "Rheumatoid arthritis of the cervical spine: pathology and treatment concepts," New Orleans, Louisiana, March 1998.
43. Instructional Course Lecturer, American Academy of Orthopaedic Surgeons Meeting: "Cervical spine: neck pain, radiculopathy, myelopathy," New Orleans, Louisiana, March 1998.
44. Moderator, Orthopaedic Research Society Presentation (Spine Papers), New Orleans, Louisiana, March 19, 1998.
45. Instructor, Contemporary Issues in Advanced Spinal Surgery, AAOS Course, Rosemont, Illinois, November 1998.
46. Faculty Instructor, Contemporary Issues in Spine Surgery: "Consequences of spinal fusion in the elderly," "Technique of occipito-cervical fusion" (videotape demonstration), "The use of anterior instrumentation with single-level anterior cervical discectomy and fusion--debate," Sarasota, Florida, March 4-7, 1999.

47. Visiting Professor, Department of Orthopaedic Surgery, Kalamazoo, Michigan, Lectures: 1) "Cervical myelopathy," 2) "Bone graft substitutes," 3) "Surgical treatment of spinal tumors," 4) "Adult spondylolisthesis," 5) "Thoracolumbar kyphotic deformities," and 6) "Surgical treatment of the rheumatoid neck," April 30-May 1, 1999.
48. Instructional Course Lecturer, AAOS Meeting: "Indications and techniques of anterior cervical decompression and fusion," Anaheim, California, February 6, 1999.
49. Instructional Course Lecturer, AAOS Meeting: "Surgical treatment of cervical myelopathy," "Cervical spine: pain, radiculopathy, and myelopathy," Anaheim, California, February 7, 1999.
50. Cervical Spine Research Society Meeting, Paper Presentation: "Pseudarthrosis of the cervical spine - a comparison of radiographic techniques," Seattle, Washington, December 17, 1999.
51. Instructional Course Lecturer, AAOS Meeting: "Surgical management of cervical myelopathy," Orlando, Florida, March 15, 2000.
52. Instructional Course Lecturer, AAOS Meeting: "Indications and techniques of anterior cervical decompression and fusion," Orlando, Florida, March 16, 2000.
53. Invited Lecturer: "Etiologies of late onset adult spine deformity," Federation of Spine Associations Meeting, Orlando, Florida, March 18, 2000.
54. Instructional Course Lecturer, Cervical Spine Research Society: "Radiographic evaluation of neck pain and radiculopathy," Charleston, South Carolina, December 2, 2000.
55. Instructional Course Lecturer, Cervical Spine Research Society: "Multilevel interbody fusion for cervical spondylotic myelopathy," Charleston, South Carolina, December 3, 2000.
56. Invited Lecturer: "Surgical treatment of cervical myelopathy," Texas Spine Study Group, Dallas, Texas, April 5, 2001.
57. Instructional Course Lecturer, Cervical Spine Update Course: "Anterior approach for cervical myelopathy," "Cervical pseudarthrosis," "Subaxial trauma to the cervical spine," and "Ankylosing spondylitis," Boston, Massachusetts, April 27-28, 2001.
58. Instructional Course Lecturer, Current Strategies in Spine Surgery, American Academy of Orthopaedic Surgeons: 1) "Morbidity and mortality risks for spine

- surgery in patients over 70--how much is too much?" and 2) "360-degree procedures: indications versus stand-alone, ALIFs, PLIFs, or posterolateral fusions," Charleston, South Carolina, May 10-12, 2001.
59. Instructional Course Lecturer, Cervical Spine Research Society: "Multilevel interbody fusion for cervical spondylotic myelopathy," Monterey, California, December 2, 2001.
  60. North American Spine Society, Special Group Presentation #29: "Corpectomy vs. laminectomy for cervical myelopathy," Montreal, Quebec, Canada, November 1, 2002.
  61. Instructor, 8<sup>th</sup> Annual Advanced Techniques in Cervical Spine Decompression & Stabilization: "Dysphagia and dysphonia," St. Louis University Practical Anatomy Workshop, St. Louis, Missouri, July 25-27, 2003.
  62. Invited Lecturer; The Surgical Management of Advanced Cervical & Lumbar Spondylosis Course: "Anterior Cervical Fusion for Myeloradiculopathy", Providence, Rhode Island, September 19-21, 2003.
  63. North American Spine Society, Paper Presentation: "Steroids for Multi-level Cervical Corpectomy Procedures: Do They Reduce Upper Airway Edema? A Randomized, Prospective, Double Blind Study," San Diego, CA, October 22, 2003.
  64. North American Spine Society, Special Group Presentation: "Corpectomy vs. Laminoplasty for Cervical Myelopathy," San Diego, CA, October 23, 2003.
  65. North American Spine Society, Moderator, "Anterior vs. Posterior Surgical Treatment of Cervical Myelopathy - Options, Pros, Cons," Chicago, IL, October 27, 2004.
  66. American Association of Orthopaedic Surgeons, Invited Lecturer; Spine Surgery: Advanced Applications and Techniques: "Rheumatoid Arthritis of the Cervical Spine, Indications and Techniques for Surgery," Chicago, IL, November 20, 2004.
  67. Cervical Spine Research Society and Instructional Course Combined Meeting: "Why I use steroids for spinal cord injury," Boston, MA, December 11, 2004.
  68. American Academy of Orthopaedic Surgeons Instructional Course Lecture, Invited Lecturer; "Surgical Management of Cervical Spine Problems in Elderly and Osteoporotic Patients," Washington, DC, February 25, 2005.

69. Federation of Spine Associations Specialty Day Meeting AAOS: “Multilevel Cervical Spondylotic Myelopathy in the Neutral Spine, Anterior Approach is Necessary,” Washington, DC, February 26, 2005.
70. American Academy of Orthopaedic Surgeons: “Rheumatoid Arthritis in the Cervical Spine: Indications and Techniques for Surgery,” Rosemont, IL, November 12, 2005.
71. Cervical Spine Research Society: “Central Cord Syndrome Early vs Late,” San Diego, CA, December 3, 2005.
72. American Association of Orthopaedic Surgeons: “Spine Surgery for Osteoporotic and Elderly Patients,” Chicago, IL, March 24, 2006.
73. Japanese Spine Research Society: “Airway Management in Cervical Spine Surgery Options or Destiny?” Tokyo, Japan, April 22, 2006.
74. Scoliosis Research Society Annual Meeting: “Outcomes in Deformity Surgery,” Monterey, CA, September 15, 2006.
75. North American Spine Society Annual Meeting, Moderator: “Cervical Motion Segment Replacement,” Seattle, WA, September 29, 2006.
76. American Academy of Orthopaedic Surgeons – Modern Techniques in Spinal Surgery: “Posterior Thoracic Disc Escision by Hemilaminotomy, Costotransversectomy and Corpectomy,” Rosemont, IL, November 16, 2006.
77. Cervical Spine Research Society Instructional Course, Moderator: “Controversies in Surgical Management Debates ACDF,” Palm Beach, FL, November 29, 2006.
78. Cervical Spine Research Society Annual Meeting, Moderator: “Anterior Cervical Complication Dysphagia,” Palm Beach, FL, November 30, 2006.
79. Federation of Spine Associations Specialty Day Meeting, AAOS: “Cervical Rheumatoid Deformities,” San Diego, CA, February 17, 2007.
80. American Academy of Orthopaedic Surgery Instructional Course Lecture, “Surgical Management of Cervical Spine Problems in Elderly and Osteoporotic Patients,” San Diego, CA, February 18, 2007.
81. American Orthopaedic Association, Moderator, “GenXers and Millennials: Sociology and Strategy for New Residents and Faculty,” Asheville, NC, June 16, 2007.

82. American Academy of Orthopaedic Surgeons: "Income Distribution in an Academic Practice," Las Vegas, NV, October 6, 2007.
83. American Academy of Orthopaedic Surgeons, Course Director: "Occipital Fixation Technique: Anatomy of Skull, Screw Placement," Rosemont, IL, November 9, 2007.
84. Cervical Spine Research Society: "Cervical Discitis, Osteomyelitis, Epidural Abscess," San Francisco, CA, November 28, 2007.
85. WENMISS (World Society for Endoscopic, Navigated & Minimal Invasive Spine Surgery: "MIS Surgery in Cervical: Friend or Foe," London, England, January 12, 2008.
86. WENMISS (World Society for Endoscopic, Navigated & Minimal Invasive Spine Surgery: "Surgical Treatment of Spinal Tumors: Basic Science and Clinical Aspects," London, England, January 13, 2008.
87. WENMISS (World Society for Endoscopic, Navigated & Minimal Invasive Spine Surgery: "Pyogenic Discitis/Vertebral Osteomyelitis: An Update on Operative Treatment," London, England, January 13, 2008.
88. Cervical Spine Research Society: "Odontoid Cervical Fixation," St. Louis, MO, January 19, 2008.
89. American Academy of Orthopaedic Surgeons: "Traumatic Injuries of the Cervical Spine: Controversies and Updates," San Francisco, CA, March 6, 2008.
90. American Academy of Orthopaedic Surgeons: "Surgical Management of Cervical Spondylitic Myelopathy," San Francisco, CA, March 7, 2008.
91. Federation of Spine Associations: "Anterior Corpectomy and Fusion, Best Solution," San Francisco, CA, March 8, 2008.
92. American Orthopaedic Association: "Orthopaedic Education: Are We Attracting the Best and Brightest?" Quebec, Canada, June 5, 2008.
93. Cervical Spine Research Society: "Anterior C1-2 Fixation" Austin, TX, Dec 3, 2008.
94. Cervical Spine Research Society: "Anterior Inadequate Decompression" Austin, TX, Dec 3, 2008.
95. Cervical Spine Research Society, the 2<sup>nd</sup> CSRS Hands-On Cadaver Course Cervical Spine Decompression & Stabilization Techniques: "Anterior Cervical Approach to C2-4 & C7-T3" St. Louis, MO, January 29, 2009.

96. American Orthopaedic Association: "Surgical Management of Cervical Spondylotic Myelopathy" Las Vegas, NV, February 25, 2009.
97. American Orthopaedic Association: "Traumatic Injuries of the Cervical Spine: Controversies and Updates" Las Vegas, NV, February 26, 2009.

**PRESENTATIONS TO REGIONAL/LOCAL MEETINGS:**

1. Advances in the Management of Spinal Cord Injury Conference: "The role of late anterior decompression in the treatment of spinal cord injuries," Cleveland, Ohio, March 1988.
2. Advances in the Management of Spinal Cord Injury Conference: "Surgical management of thoracolumbar fractures," Cleveland, Ohio, March 1988.
3. Ohio Orthopaedic Society: "Treatment of hematogenous pyogenic vertebral osteomyelitis with anterior debridement and bone grafting," Cleveland, Ohio, April 1988.
4. Comprehensive Management of Adult Spinal Disorders: "Cervical disc disease," Sawmill Creek, Huron, Ohio, November 1988.
5. Comprehensive Management of Adult Spine Disorders: "Thoracolumbar spine fractures," Sawmill Creek, Huron, Ohio, November 1988.
6. Spine Conference, University Hospitals of Cleveland: "Thoracolumbar fractures," Cleveland, Ohio, February 28, 1989.
7. Spine Conference: "MRI and post-traumatic ligament injury," Cleveland, Ohio, May 9, 1989.
8. Orthopaedic Review Course, Case Western Reserve University and University Hospitals of Cleveland: "Degenerative disease of the cervical spine," Cleveland, Ohio, June 1989, June 1990.
9. Orthopaedic Review Course, Case Western Reserve University and University Hospitals of Cleveland: "Treatment of thoracolumbar spine fractures," Cleveland, Ohio, June, 1989, June 1990.
10. Obstetrics/Gynecology Department Grand Rounds, Case Western Reserve University: "Low back pain in women," Cleveland, Ohio, November 1989.

11. Spine Conference, University Hospitals of Cleveland: "Principles of bracing and orthoses of the spine," Cleveland, Ohio, December 1989.
12. Spine Conference, University Hospitals of Cleveland: "Cervical disc disease," Cleveland, Ohio, July 10, 1990.
13. University of Akron Medical Center, Department of Orthopaedics Grand Rounds: "Surgical treatment of thoracolumbar spine injuries," November 1990, Akron, Ohio.
14. Spine Conference, University Hospitals of Cleveland: "Vertebral osteomyelitis," Cleveland, Ohio, January 22, 1991.
15. Cleveland Physical Therapy Orthopaedic Study Group: "Current trends in lumbar spine surgery," Cleveland, Ohio, April 1, 1991.
16. Rainbow Babies and Children's Auditorium, University Hospitals: "Radiographic imaging techniques of the spine," Cleveland, Ohio, May 8, 1991.
17. Ohio Orthopaedic Society: "Robinson anterior cervical discectomy and fusion for cervical radiculopathy: long term follow-up of 122 patients," Akron, Ohio, May 10, 1991.
18. Ohio Orthopaedic Society: "Magnetic resonance imaging of post-traumatic spinal ligament injury," Akron, Ohio, May 10, 1991.
19. Spine Conference: "Radiographic imaging of spinal trauma," University Hospitals, Cleveland, Ohio, May 14, 1991.
20. University of Akron Medical Center, Department of Orthopaedics Grand Rounds: "Orthopaedic management of cervical disc disease," Akron, Ohio, November 23, 1991.
21. Grand Rounds, Case Western Reserve University, Orthopaedic Department: "Cervical disc disease," Cleveland, Ohio, January 11, 1992.
22. Spine Conference: "Principles of bracing and orthoses," University Hospitals of Cleveland, Cleveland, Ohio, January 25, 1992.
23. Hematology-Oncology Conference: "A surgical view of spinal tumors -- clinical and basic research experience," University Hospitals of Cleveland, April 21, 1992.
24. Ohio Orthopaedic Society: "Robinson anterior cervical fusion: a comparison of the standard vs. modified technique," Columbus, Ohio, May 15, 1992.

25. Ohio Orthopaedic Society: "The biological and biomechanical effects of irradiation on anterior spinal bone grafts - a canine model," Columbus, Ohio, May 16, 1992.
26. Spine Conference: "Cervical disc disease," University Hospitals of Cleveland, September 8, 1992.
27. Spine Conference: "Vertebral osteomyelitis," University Hospitals of Cleveland, March 9, 1993.
28. Geauga Hospital CME Conference: "Low back pain and lumbar disc disease: diagnosis and management," April 21, 1993.
29. Spine Conference: "Metastatic disease of the spine," University Hospitals of Cleveland, April 27, 1993.
30. Ohio Orthopaedic Society: "The fate of anterior spinal bone grafts in patients irradiated for neoplasm," Dayton, Ohio, May 7, 1993.
31. Orthopaedic Review Course, Case Western Reserve University and University Hospitals of Cleveland: 1) "Cervical disc disease" and 2) "Spinal tumors," May 20, 1993.
32. Hershey Medical Center, Orthopaedic Grand Rounds: "Surgical treatment of spinal tumors: clinical basic science aspects," Hershey, Pennsylvania, October 27, 1993.
33. Simmons Surgical Society 17th Annual Meeting: "Radiation and bone grafting in the spine," Cleveland, Ohio, April 1994.
34. Spine Conference, University Hospitals of Cleveland: "Principles of bracing and orthoses of the spine," Cleveland, Ohio, April 1994.
35. Orthopaedic Grand Rounds, St. Vincent Medical Center: "Cervical disc disease including radiculopathy and myelopathy," Toledo, Ohio, April 1994.
36. Ohio Orthopaedic Society: "Anterior decompression and fusion for cervical spondylotic myelopathy -- two to seventeen year follow-up," Cleveland, Ohio, April 1994.
37. Grand Rounds, St. Luke's Hospital: "Surgical treatment of spinal tumors," Cleveland, Ohio, September 8, 1994.
38. Spine Conference, University Hospitals of Cleveland: "Metastatic disease of the spine," Cleveland, Ohio, January 10, 1995.

39. Spine Conference, University Hospitals of Cleveland: "Vertebral osteomyelitis," Cleveland, Ohio, March 8, 1995.
40. Grand Rounds, Department of Orthopaedics, University Hospitals of Cleveland: "Cervical disc disease," Cleveland, Ohio, April 29, 1995.
41. Ohio Orthopaedic Society: "Lumbar fusion with and without instrumentation. a prospective, randomized study," Toledo, Ohio, May 12, 1995.
42. Orthopaedic Research Conference, University Hospitals of Cleveland: "The effect of internal fixation on CaCO<sub>3</sub> ceramic anterior spinal fusion in the canine," Cleveland, Ohio, November 8, 1995.
43. Orthopaedic Biomechanics Course: "Clinical biomechanics of the spine," Cleveland, Ohio, November 9, 1995.
44. Orthopaedic Grand Rounds, CWRU/University Hospitals of Cleveland: "Surgical management of spinal tumors," Cleveland, Ohio, January 20, 1996.
45. Veterans Administration Hospital, CME Lecture: "Management of lumbar disc disease," Cleveland, Ohio, January 24, 1996.
46. Ohio Orthopaedic Society: "Multilevel cervical corrections and fibular strut grafting: intermediate clinical and radiographic follow up," Cincinnati, Ohio, May 11, 1996.
47. Spine Conference, University Hospitals of Cleveland: "Cervical disc disease," Cleveland, Ohio, March 11, 1995.
48. Ohio Orthopaedic Society: "Three-level anterior cervical discectomy and fusion: clinical and radiographic results," Akron, Ohio, May 9, 1997.
49. Orthopaedic Grand Rounds, CWRU/University Hospitals of Cleveland: "Surgical treatment of the rheumatoid neck," Cleveland, Ohio, September 12, 1998.
50. Ohio Orthopaedic Society: "Pseudarthrosis of the cervical spine--a comparison of radiographic techniques," Dayton, Ohio, May 7, 1999.
51. Orthopaedic Grand Rounds, CWRU/University Hospitals of Cleveland: "Lumbar anterior interbody fusion," Cleveland, Ohio, October 9, 1999.
52. Orthopaedic Grand Rounds, CWRU/University Hospitals of Cleveland: "Surgical treatment of cervical myelopathy," Cleveland, Ohio, December 16, 2000.
53. UHHS Telemedicine Conference: "When low back pain is an emergency," Cleveland, Ohio, October 23, 2002.

54. CWRU/UH Department of Orthopaedic Surgery Academic Program with AOA Austria-Swiss-German Traveling Fellows: "Porous tantalum vs. iliac bone grafting for ACDF in a caprine model," Cleveland, Ohio, March 3, 2003.
55. Ohio Orthopaedic Society: "Porous tantalum vs. iliac bone grafting for ACDF in a caprine model," Cincinnati, Ohio, May 9, 2003.
56. 30<sup>th</sup> Annual Hal Wagner Family Medicine Conference: "Cervical disc disease," Morgantown, WV, September 24, 2004.
57. Strategic Planning Leadership and Management Series Winter/Spring 2005, "Strategic Thinking/Planning", Morgantown, WV, April 8, 2005.
58. WVUH Spine Conference, "Red Flags Spine Related Emergencies" Morgantown, WV, October 14, 2005.
59. Neurology Grand Rounds, West Virginia University Hospital, "Surgical Treatment of Cervical Myelopathy." Morgantown, WV, January 2006.
60. WVUH Spine Conference, "Lumbar Spondylolisthesis" Roanoke, WV, September 21, 2007.
61. Monongahela Valley Association of Health Centers, "Spine Related Emergencies", Fairmont, WV, October 31, 2007.

#### **SCIENTIFIC/POSTER EXHIBITS:**

1. American Academy of Orthopaedic Surgeons Meeting, Poster Presentation: "Fascicular nerve repair using microsurgery: synthetic vs. nerve grafts," New Orleans, Louisiana 1982.
2. American Academy of Orthopaedic Surgeons Meeting, Scientific Exhibit: "MRI of post-traumatic spinal ligament injury," Las Vegas, Nevada, February 9-14, 1989.
3. Orthopaedic Research Society Poster: "The biological and biomechanical effects of irradiation on anterior spinal bone grafts - a canine model," Washington, D.C., February 1992.
4. Cervical Spine Research Society Meeting, Poster Presentation: "Robinson anterior cervical fusion: a comparison of the modified vs. standard techniques," San Diego, California, December 1992.
5. American Academy of Orthopaedic Surgeons Meeting, Scientific Exhibit: "The biological and biomechanical effects of irradiation on anterior spinal bone grafts - a canine model," San Francisco, California, February 1993.

6. American Academy of Orthopaedic Surgeons Meeting, Scientific Exhibit: "The effect of radiation on posterior spinal fusions: a rabbit model," New Orleans, Louisiana, February 1994.
7. Orthopaedic Research Society, Poster Presentation: "The effects of internal fixation on calcium carbonate ceramic anterior spinal fusion in the canine," Orlando, Florida, February 1995.
8. American Academy of Orthopaedic Surgeons, Poster Presentation: "Cerebral spinal fluid leaks complicating anterior cervical surgery," San Francisco, California, February 28-March 4, 2001; Co-author with Dr. Greg Carlson.
9. Cervical Spine Research Society Twenty-Ninth Annual Meeting, Poster Presentation: "Single level anterior cervical discectomy and fusion: is rigid postoperative bracing necessary?" Monterey, California, November 29-December 1, 2001; Co-authors with Dr. Warren Yu, Dr. Brett Quigley, and Dr. Greg Carlson.
10. Cervical Spine Research Society Twenty-Ninth Annual Meeting, Poster Presentation: "The effect of two level anterior cervical discectomy and fusion on general health status," Monterey, California, November 29-December 1, 2001; Co-authors with Dr. Warren Yu, Dr. Greg Carlson, and Dr. Jung Yoo.
11. Cervical Spine Research Society, European Section, Poster Presentation: "Perioperative Corticosteroids for Upper Airway Edema"; Barcelona, Spain, June 20, 2003.
12. Scoliosis Research Society, E-Poster: "Posterior Lumbar Spinal Fusion in Spondylolisthesis: A Prospective, Randomized Study with or without Postoperative Lumbosacral Orthosis"; Quebec City, Canada, September 11-13, 2003.
13. American Orthopaedic Association, Poster Presentation: "Steroids for Multi-Level Cervical Corpectomy Procedures: Do They Reduce Upper Airway Edema? A Randomized, Prospective, Double Blind Study"; Boston, Massachusetts, June 23-26, 2004.
14. American Orthopaedic Association, Poster Presentation: "Physician Incentives for Academic Productivity: An Analysis of Orthopaedic Departments Compensation Strategy," Boston, Massachusetts, June 23-26, 2004.